Complete Summary

GUIDELINE TITLE

Cardiovascular disease in women: a guide to risk factor screening, prevention and management.

BIBLIOGRAPHIC SOURCE(S)

Brigham and Women's Hospital. Cardiovascular disease in women: a guide to risk factor screening, prevention and management. Boston (MA): Brigham and Women's Hospital; 2002. 15 p. [16 references]

COMPLETE SUMMARY CONTENT

SCOPE

DISEASE/CONDITION(S)

Cardiovascular disease (coronary heart disease)

GUIDELINE CATEGORY

Management
Prevention
Risk Assessment
Screening
Treatment

CLINICAL SPECIALTY

Cardiology
Family Practice
Internal Medicine

Nursing
Preventive Medicine

INTENDED USERS

Advanced Practice Nurses
Dietitians
Health Care Providers
Physician Assistants
Physicians

GUIDELINE OBJECTIVE(S)

- To provide physicians with clear clinical pathways to determine the risk of coronary heart disease (CHD) in individual women
- To identify modifiable risk factors for CHD
- To develop strategies for prevention and treatment of these risk factors

TARGET POPULATION

Women in the general population

INTERVENTIONS AND PRACTICES CONSIDERED

1. Assessment of risk factors for coronary heart disease
2. Modification of lifestyle including smoking cessation, physical exercise, weight loss, diet and nutrition
3. Detection, evaluation, and treatment of elevated cholesterol
4. Screening, management and treatment of hypertension, diabetes mellitus and obesity
5. Aspirin as secondary prevention
6. Metformin as primary prevention for diabetes mellitus
7. Other risk modifiers including hormone replacement therapy, antioxidant supplements, alcohol intake and cardiac rehabilitation programs
8. Pharmacotherapy for smoking cessation: Bupropion (Wellbutrin SR®, Zyban®), nicotine patch (Nicoderm®, Habitrol®, Nicotrol®), Nicorette® gum, Nicotrol® nasal spray, Nicotrol® inhaler, and nortriptyline
9. Pharmacotherapy for hyperlipidemia:
    - HMG CoA reductase inhibitors (statins) (lovastatin, pravastatin, simvastatin, atorvastatin, fluvastatin)
    - Bile acid sequestrants (cholestyramine, colestipol, colesevelam)
    - Nicotinic acids: immediate release, sustained release, extended release (e.g., Niaspan)
    - Fibric acids (gemfibrozil, fenofibrate, clofibrate)

MAJOR OUTCOMES CONSIDERED

Risk for and incidence of coronary heart disease

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Hand-searches of Published Literature (Secondary Sources)
Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

The guideline developer performed literature searches using Medline.

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Subjective Review

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Not applicable

METHODS USED TO ANALYZE THE EVIDENCE

Review

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not applicable

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Not stated

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Not applicable

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

Internal Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

Not stated

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

Risk Factors

Cigarette Smoking

Clinical Interventions

Research has shown that interventions as brief as 3 minutes can significantly increase smoking cessation rates. Physician advice to quit and smoking cessation behavioral counseling are associated with 10%-13% abstinence rates, respectively, while pharmacotherapy is associated with abstinence rates ranging between 20%-30% at 6 months. The highest cessation rates are achieved when behavioral counseling and pharmacotherapy are combined.

Pharmacotherapy for Smoking Cessation*

Bupropion (Wellbutrin SR®, Zyban®)**

Nicotine Products

Nicotine patch (Nicoderm®, Habitrol®, Nicotrol®)

Nicorette® gum

Nicotrol® nasal spray

Nicotrol® inhaler

Nortriptyline

*Reimbursement for pharmacologic aids to smoking cessation varies by insurer.

**Nicotine replacement therapy in conjunction with bupropion is more effective than either treatment alone.

Resources:

BWH Quit Smoking program. Referral Line is 1-800-BWH-9999.

Free Massachusetts Smoker´s Quitline: Tel (English) 800-TRY-TO-QUIT/879-8678 Tel (Spanish) 800-DEJALO/833-5256

Websites for patients:

www.cdc.gov/tobacco; www.quitnet.com

Lipids

Ten Steps for Detection, Evaluation and Treatment of Elevated Cholesterol

5. Determine lipoprotein levels after a 9 to 12 hour fast (total cholesterol, high-density lipoprotein [HDL], triglycerides, and calculated low-density lipoprotein [LDL]) in individuals over the age of 20, every 5 years.

Adult Treatment Panel (ATP) III Classification of LDL, Total, and HDL Cholesterol (mg/dL)

LDL Cholesterol - Primary target of therapy

- <100: optimal
- 100-129: near optimal/above optimal
- 130-159: borderline high
- 160-189: high
- ≥190: very high

Total Cholesterol

- <200: desirable
- 200-239: borderline high
- ≥240: high

HDL Cholesterol

- <40: low
- ≥60: high

6. Determine whether clinical syndromes conferring high risk for coronary heart disease (CHD) events are present.
    - Clinical CHD
    - CHD equivalent:
        - Symptomatic carotid artery disease
        - Peripheral arterial disease
        - Abdominal aortic aneurysm
        - Diabetes mellitus
7. Determine the presence of other major risk factors (not including LDL).
    - Cigarette smoking
    - Hypertension (blood pressure ≥140/90 mm Hg, or treatment with antihypertensive medication)
    - Low HDL cholesterol (<40 mg/dl). Note: HDL ≥60 mg/dL counts as a "negative risk factor"

- Family history of premature CHD (CHD in male first degree relative <55 years old; CHD in female first degree relative <65 years old)
- Age ≥55 years (for women)

8. Determine 10-year risk of CHD event using the tables provided in the original guideline document. (Note: if only 0 or 1 risk factor is present, no need to calculate 10-year risk).
9. Decide upon treatment goals and clinical interventions, based on 10-year risk.

CHD or CHD Risk Equivalent or >20% 10-year Risk

LDL Goal (mg/dl): <100

LDL Level (mg/dl) at which to initiate therapeutic lifestyle changes (TLC): ≥100

LDL Level (mg/dl) at which to consider drug therapy: >130 (120-129 drug therapy optional)

2+ Risk Factors and ≤20% 10-year Risk

LDL Goal (mg/dl): <130

LDL Level (mg/dl) at which to initiate TLC: ≥130

LDL Level (mg/dl) at which to consider drug therapy:

10-year risk 10-20%: >130

10-year risk <10%: >160

0-1 Risk Factors

LDL Goal (mg/dl): <160

LDL Level (mg/dl) at which to initiate TLC: ≥160

LDL Level (mg/dl) at which to consider drug therapy: >190 (160-189 drug therapy optional)

10. Institute therapeutic lifestyle changes (TLC) when appropriate (see "Preventive Strategies" below).
11. Begin drug therapy if indicated (see "Drug Therapy" below).
12. Treat metabolic syndrome, if still present after 3 months of TLC. Syndrome is identified if three or more risk factors below are present.

Risk Factor: Abdominal obesity

Criteria: waist circumference >35 inches

Intervention: weight management; increase physical activity

Risk Factor: Triglycerides

Criteria: ≥150 mg/dl

Intervention: Treat (see the section "Drug Therapy" below)

Risk Factor: HDL

Criteria: ≤50 mg/dl

Intervention: Treat (see the section "Drug Therapy" below)

Risk Factor: Blood Pressure

Criteria: ≥130/≥85 mm Hg

Intervention: Treat medically

Risk Factor: Fasting glucose

Criteria: ≥110mg/dl

Intervention: Weight management; increase physical activity

13. Manage hypertriglyceridemia

Recent meta-analyses suggest that having an elevated triglyceride level is an independent risk factor for CHD. Risk factors for elevated triglycerides include obesity and overweight, physical inactivity, smoking, excess alcohol intake, several diseases (type 2 diabetes, chronic renal failure) and certain drugs (steroids, estrogens, beta-blockers). Initial treatment strategy is to encourage weight loss and increased physical activity.

If triglycerides are still ≥200 mg/dl after LDL goal is reached:

- Set non-HDL goal [total cholesterol - HDL] which is 30 mg/dl higher than LDL goal in any given risk category.

  Risk Category: CHD or CHD Risk Equivalent or 10-year risk for CHD >20%

  LDL Goal (mg/dl): <100

  Non-HDL Goal (mg/dl): <130

  Risk Category: Multiple (2+) Risk factors and 10-year Risk ≤20%

  LDL Goal (mg/dl): <130

Non-HDL Goal (mg/dl): <160

Risk Category: 0-1 Risk Factor

LDL Goal (mg/dl): <160

Non-HDL Goal (mg/dl): <190

- Consider adding drug to reach non-HDL goal. (e.g. nicotinic acid or fibrate to lower triglycerides--see the section "Drug Therapy" below)
- If triglycerides ≥500 mg/dl, first lower triglycerides (before treating LDL) to prevent pancreatitis, utilizing the following measures:
  - Very low-fat diet (<15% calories from fat)
  - Weight management and physical activity
  - Fibrate or nicotinic acid
  - When triglycerides <500 mg/dl, begin to lower LDL

14. Treat low HDL cholesterol after reaching LDL goal.

If triglycerides <200 mg/dl (isolated low HDL) in patients with CHD or CHD equivalent, consider addition of nicotinic acid or fibrate to treat.

Website for NHLBI guideline: www.nhlbi.nih.gov/index.htm

Drug Therapy

Should be considered in patients with CHD or CHD equivalent (i.e. diabetes, peripheral vascular disease or aortic aneurysm) at the same time that TLC is initiated. For patients with lower 10-year risk, consider adding drug therapy if LDL has not reached goal after 3 months of TLC.

Drugs Affecting Lipoprotein Metabolism

Drug Class: HMG CoA reductase inhibitors (statins)

Drug: Lovastatin, Pravastatin, Simvastatin, Atorvastatin, Fluvastatin

Lipid Effect: LDL lowered 18-55%, HDL increased 5-15%, triglycerides (TG) lowered 7-30%

Drug Class: Bile acid sequestrants

Drug: Cholestyramine, Colestipol, Colesevelam

Lipid Effect: LDL lowered 15-30%, HDL increased 3-5%, TG maintained or lowered

Drug Class: Nicotinic acid

Drug: Immediate release nicotinic acid, Extended release nicotinic acid (Niaspan), Sustained release nicotinic acid

Lipid Effect: LDL lowered 5-25%, HDL increased 15-35%, TG lowered 20-50%

Drug Class: Fibric acids

Drug: Gemfibrozil, Fenofibrate, Clofibrate

Lipid Effect: LDL lowered 5-20%, HDL increased 10-20%, TG lowered 20-50%

Hypertension

Screening for Hypertension

Every woman should have her blood pressure checked at least once every two years, and annually after the age of 40. Optimal blood pressure is <120/<80, and normal blood pressure is <130/<85 mm Hg. (The Sixth Report of the Joint National Committee on Prevention, Detection, Evaluation and Treatment of High Blood Pressure. Bethesda (MD): U.S. Department of Health and Human Services, Public Health Service, National Institutes of Health, National Heart, Lung and Blood Institute; 1997 Nov. 33 p.)

Hypertension Treatment Recommendations

Blood Pressure Stage: High-normal*** (130-139/85-89 mm Hg)

Risk Group A, No Major Risk Factors*, no TOD/CCD: Lifestyle modification

Risk Group B, At least one major risk factor, not including diabetes: Lifestyle modification

Risk Group C, TOD/CCD and/or diabetes, with or without other risk factors:

- Drug therapy for those with heart failure, renal insufficiency or diabetes
- Lifestyle modification

Blood Pressure Stage: Stage 1 (140-159/90-99 mm Hg)

Risk Group A, No Major Risk Factors*, no TOD/CCD: Lifestyle modification (up to 12 months)

Risk Group B, At least one major risk factor, not including diabetes:

- Lifestyle modification (up to 6 months)
- For patients with multiple risk factors, clinicians should consider drugs as initial therapy plus lifestyle modifications

Risk Group C, TOD/CCD and/or diabetes, with or without other risk factors:

- Drug therapy
- Lifestyle modification

Blood Pressure Stages: Stage 2 and 3 ($\geq$160/$\geq$100)

Risk Group A, No Major Risk Factors*, no TOD/CCD:

- Drug therapy
- Lifestyle modification

Risk Group B, At least one major risk factor, not including diabetes:

- Drug therapy
- Lifestyle modification

Risk Group C, TOD/CCD and/or diabetes, with or without other risk factors:

- Drug therapy
- Lifestyle modification

*Major risk factors for hypertension: smoking, dyslipidemia, diabetes mellitus, age >60 years, postmenopausal status, family history of CHD in a first degree relative (female relative <65, male relative <55).

**Target Organ Damage/Clinical Cardiovascular Disease (TOD/CCD): CHD, stroke transient ischemic attack (TIA), nephropathy, peripheral artery disease, hypertensive retinopathy.

***Recent analysis of data from the Framingham study suggest that individuals with high normal blood pressure are at increased risk for CHD events.

Goal Blood Pressure

<140/90 mm Hg for patients with uncomplicated hypertension and patients in risk group A, risk group B, and risk group C, except for the following:

- <130/85 mm Hg for patients with renal failure, or heart failure
- <130/80 mm Hg for patients with diabetes
- <125/75 mm Hg for patients with renal failure with proteinuria >1 gram/24hours

Isolated Systolic Hypertension (ISH) in Older Women

The incidence of isolated systolic hypertension (ISH), or hypertension only of systolic, not diastolic, blood pressure, increases with age: 8% of people age 60-69 years have isolated systolic hypertension, while 22% of those aged 80 and older have it. The Systolic Hypertension in the Elderly (SHEP) trial showed that in people aged 60 and older, treating isolated systolic hypertension with a low-dose, oral diuretic reduced the incidence of stroke by 36% and the incidence of nonfatal myocardial infarction by 27%.

Hypertension in Minorities

African Americans have the highest prevalence of hypertension in the world. They also have an 80% higher stroke mortality rate, a 50% higher heart disease mortality rate, and a 320% greater rate of hypertension-related end-stage renal disease than the general population.

Lifestyle modifications are particularly important for African Americans because they are more likely to have other risk factors for cardiovascular disease. African Americans also have an increased responsiveness to reduced salt intake. To achieve a blood pressure goal below 140/90 mm Hg in African Americans, consider using a diuretic as a first-choice drug, unless they have comorbidity indicating the need for other agents.

Hypertension during Pregnancy

Avoid angiotensin-converting enzyme inhibitors and angiotensin II receptor blockers throughout pregnancy. Alpha-methyldopa and beta-blockers are often used to treat hypertension in pregnancy, and aldomet and labetalol are commonly used as a first-line drug for new hypertension during pregnancy. Diuretics can be continued in pregnancy, but caution should be exercised to avoid hypovolemia.

Diabetes Mellitus

Risk Factors

The major risk factors for type 2 diabetes, or non-insulin-dependent diabetes mellitus (NIDDM) are:

30. Overweight. Having a body mass index (BMI) >25 kg/m^2 is associated with a moderate increase in risk
31. Family history of diabetes in a first degree relative
32. Race (Native American, Hispanic, or black)
33. Age >45 years
34. Previously identified impaired glucose tolerance (IGT) or impaired fasting glucose (IFG)
35. Hypertension (blood pressure >140/90 mm Hg)
36. Dyslipidemia (HDL cholesterol <35 mg/dl or triglycerides $\geq$250 mg/dl.
37. History of gestational diabetes mellitus (GDM) or delivery of infant over 9 pounds (1/3 to 1/2 of women with gestational diabetes mellitus go on to develop diabetes)

Other risk factors include:

38. Smoking. About 10% of the incidence of Type 2 diabetes in the United States is attributable to smoking.
39. Polycystic ovary syndrome
40. Dietary factors. Diets low in fiber and high in glycemic load are also associated with an increased risk of diabetes.

Screening for Diabetes

The American Diabetes Association recommends screening patients with one or more major risk factors for diabetes (see above) every three years. More frequent screening should be considered for those at high risk. Patients who show any of the classic symptoms of diabetes (excessive thirst, hunger, or polyuria) should also be screened.

Women with a plasma glucose level >126 mg/dl on two separate occasions have diabetes mellitus. Those with levels <110 mg/dl are normal. Women with plasma glucose levels between 110 mg/dl and 125 mg/dl have impaired fasting glucose and should be retested annually.

Prevention of Diabetes

Evidence suggests that development of type 2 diabetes in patients at risk may be prevented by:

41. Regular exercise.
42. Weight loss. Patients should begin a sensible weight-loss program if they weigh 10% or more than what is recommended for their build. Even weight losses of 5-10% of the starting weight will decrease risk. A study involving 500 Finnish patients at high risk for developing diabetes who were randomized to diet and exercise or placebo showed that the incidence of diabetes was 11% in the intervention group compared with 23% in the control group.
43. Metformin: Data from two large trials (the Diabetes Prevention Program and the Finnish Diabetes Prevention Study) indicate that metformin reduces the incidence of diabetes mellitus in at-risk individuals by 30-50%.

Treatment of Diabetes Mellitus

Treatment of diabetes mellitus is beyond the scope of this guideline. Management goals include achieving Hgb A1c levels <7%, LDL lipid levels <100 and HDL levels >55, smoking cessation, weight reduction, and encouraging regular physical exercise.

Obesity

Risks of Overweight and Obesity

Overweight and obesity raise the risk of developing hypertension, dyslipidemia, Type 2 diabetes, coronary heart disease, and stroke; and increases the risk of all-cause mortality. In the Nurses´ Health Study, women with BMI $\geq$29 kg/m^2 were more than three times as likely to have CHD than women with a BMI <29 kg/m^2.

Benefits of Weight Loss in Overweight and Obese Women:

Even modest weight loss helps to:

- Lower blood pressure in women with high blood pressure

- Lower elevated levels of total cholesterol, LDL cholesterol, and triglycerides, and to raise low levels of HDL cholesterol in women with dyslipidemia
- Lower elevated blood glucose levels in women with type 2 diabetes
- Prevent diabetes

Identification of Overweight and Obese Women

Body Mass Index (BMI)

BMI = [weight (pounds)/height (inches)^2] x 703

Classification of Overweight and Obesity by BMI

Underweight: BMI (kg/m^2) <18.5

Normal: BMI (kg/m^2) 18.5-24.9

Overweight: BMI (kg/m^2) 25.0-29.9

Obesity: BMI (kg/m^2) 30.0-39.9

Extreme Obesity: BMI (kg/m^2) $\geq$40

Waist-to-Hip Ratio (WHR)

WHR = waist measurement/hip measurement

Women with a WHR >0.8 along with a waist measurement >35 inches are at an increased risk for heart attack and stroke compared to women with a lower WHR and waist measurement.

Treatment Goals

The initial goal of treatment for overweight and obesity is to reduce body weight by 10% from baseline within six months. After six months, if more weight loss is needed, another attempt at weight loss should be made. If not, the focus should shift to maintenance of weight loss.

Treatment Strategies

For all overweight and obese women:

- Dietary therapy - A calorie deficit of 500 to 1000 kcal/ day would result in an approximately 1-2 lb weight loss per week
- Physical activity - regular physical activity will mainly help maintain weight loss
- Behavior therapy - strategies based on learned principles that will help overcome barriers to dietary therapy and/or increased physical activity

- Combined therapy - The most successful therapy for weight loss is a combination of dietary therapy, physical activity, and behavioral therapy

For selected women with BMI $\geq$30 or with BMI $\geq$27 and one or more risk factors including hypertension, dyslipidemia, CHD, type 2 diabetes, or sleep apnea:

- Consider pharmacotherapy - Combined therapy must be maintained for at least six months before beginning pharmacotherapy. Weight loss drugs such as sibutramine (Meridia®) and/or orlistat (Xenical®) may be used to augment combined therapy to modestly enhance weight loss and facilitate weight loss maintenance.

For women with BMI $\geq$40 or BMI $\geq$35 with comorbid conditions in whom medical therapy has failed and who are suffering from complications of extreme obesity:

- Consider weight loss surgery. Gastrointestinal surgery (vertical gastric banding) or gastric bypass (Roux-en Y) is an option for motivated patients with acceptable operative risks.

Brigham and Women´s Hospital Program for Weight Management

Brigham and Women´s Hospital´s program for weight management offers a range of individualized weight loss and maintenance approaches that include calorie-restricted and/or liquid formula diets, prescription medicine, obesity surgery, group exercise and weight-loss maintenance programs. (617) 732-8500.

Physical Inactivity

Health Benefits of Physical Activity

Physical activity substantially reduces the risk of coronary heart disease, hypertension, Type 2 diabetes, osteoporosis, and obesity. CHD rates are 50% lower in active women compared with inactive women. (See recommendations below)

Preventive Strategies

Low-dose Aspirin: Secondary Prevention

Data from the Physician´s Health Study, which included over 22,000 male physicians randomized to aspirin or placebo, indicates that aspirin lowers the risk of fatal or non-fatal myocardial infarction by almost 50%. Although there has been no comparable study in women, most clinicians treat women with risk factors for CHD with aspirin. Doses of 81 mg or 325 mg orally each day are commonly used.

Therapeutic Lifestyle Changes (TLC)

- Quit smoking

- Lose weight, if needed. A BMI of <25 is recommended. Weight loss of 10% of baseline weight can make considerable improvements in risk factor reduction for elevated blood pressure, glucose and lipids.
- Increase physical activity

Surgeon General´s report on physical activity and health and the 1995 Dietary Guidelines for Americans recommend that all American adults get:

- At least 30 minutes of moderate-intensity, aerobic exercise on all or most days of the week (Examples: brisk walking, jogging, tennis, volleyball, stair climbing, swimming, bicycling, etc.) Increasing evidence suggests that 10 minutes of moderate-intensity, aerobic activity done three times per day has the same fitness benefits as 30 minutes of activity done in a single session.
- 20 minutes of strength training exercise 2-3 times per week, which preserves and enhances muscular strength and increases lean body mass.

Precautions: Previously sedentary people who are beginning a physical activity program should start with short duration moderate-intensity activity and gradually increase the intensity and duration of their workout.

Diet and Nutrition: Primary and Secondary Prevention

Dietary Recommendations for Primary and Secondary Prevention of CHD

*based on ATP III Therapeutic Lifestyle Changes Recommendations for Diet and on Dietary Guidelines for Americans 2000

Saturated fat (e.g. cheese, butter, fatty meats)

Recommended Intake: Primary prevention: <10% of total calories

Secondary prevention: <7 % of total calories

Polyunsaturated fat (e.g. Omega 3´s-fish oil, flaxseed; Omega 6´s-corn safflower, soybean oils; walnuts)

Recommended Intake: Up to 10% of total calories

Monounsaturated fat (e.g. olive oil, canola oil, peanut oil, peanut butter, most nuts)

Recommended Intake: Up to 20% of total calories

Total fat

Recommended Intake: 25-35% of total calories

Comment: Total fat intake may range up to 35%, provided that saturated fats and trans fats are kept low. Higher monounsaturated fat intake can reduce triglycerides and raise HDL cholesterol.

Carbohydrate

Recommended Intake: 50-60% of total calories

Comment: Emphasize whole grains and fruits and vegetables (5+ serving per day)

Fiber

Recommended Intake: 20-30 grams per day

Protein

Recommended Intake: Approximately 15% of total calories

Cholesterol

Recommended Intake: Primary prevention: <300 mg/day

Secondary prevention: <200 mg/day

Salt (sodium chloride)

Recommended Intake: <6g/day

Comment: This is the equivalent of 2400 mg of sodium per day

- Limit alcohol intake to no more than 1 drink per day
- Limit intake of saturated fats (e.g. cheese, butter, fatty meats) and trans fatty acids (e.g. margarine, vegetable shortenings, foods containing partially hydrogenated vegetable oil)
- Emphasize fruits, vegetables, whole grains, legumes, and low-and non-fat dairy products
- At least two servings of fish (omega 3 fatty acids) per week are recommended for everyone
- Results from the Nurses´ Health Study show that women with the highest intakes of vitamin B_6 and folate were almost half as likely to have a heart attack or die from heart disease as women with the lowest intakes
- For persons with high total and LDL cholesterol and for people who are in need of secondary prevention, the American Heart Association recommends the use of plant sterols (2-3 grams daily), which can be found in several margarines (such as Benecol® and Take Control®). Plant sterols, obtained from cell membranes of plant cells, block absorption of cholesterol and have been reported to decrease total and LDL cholesterol levels by 9-20%. There is no evidence, however, that they decrease risk of CHD.
- Encourage hypertensive patients to follow the DASH (Dietary Approaches to Stop Hypertension) Diet.

DASH Diet

Grains: Daily Servings 7-8

Vegetables: Daily Servings 4-5

Fruits: Daily Servings 4-5

Low-fat or fat-free dairy foods: Daily Servings 2-3

Meats, poultry, and fish: Daily Servings 2 or less

Nuts, seeds, and dried beans: Daily Servings 4-5 per week

Fats and oils: Daily Servings: 2-3

Sweets: Daily Servings: 5 per week

Other Risk Modifiers

Refer to the original guideline document for information on hormone replacement therapy, antioxidant supplements, alcohol, and cardiac rehabilitation programs.

CLINICAL ALGORITHM(S)

None provided

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of supporting evidence is not specifically stated for each recommendation.

Guidelines are based on a comprehensive review of recent medical literature and reflect the expertise of leading clinicians within Brigham and Women´s Hospital.

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

Appropriate prevention, diagnosis and treatment of cardiovascular disease in women

Subgroups Most Likely to Benefit

Women at highest risk for coronary heart disease (CHD):

- African American women, who have a higher mortality rate for coronary heart disease than Caucasian women
- Women over the age of 60, as the rate of coronary heart disease increases with age from 1 in 17 to 1 in 4
- Women with risk factors including elevated low-density lipoprotein (LDL) cholesterol, hypertension, diabetes mellitus, overweight and obesity
- Women with lifestyle risk factors of smoking, physical inactivity and diet

POTENTIAL HARMS

- Bupropion. Dry mouth, insomnia, headache
- Nicorette® gum. Nicotine gum can cause mouth sores, dyspepsia, jaw aching (due to excessive chewing).
- Nicotrol® nasal spray. Nasal spray can cause local irritation, rhinitis, sneezing, coughing. Tolerance usually develops after a week.
- Nicotrol® inhaler. Inhaler can cause cough and throat irritation.
- Nortriptyline. Dry mouth (64%) and dysgeusia (20%)
- HMG CoA reductase inhibitors (statins). Nausea, dyspepsia, muscle cramps, myopathy (rhabdomyolysis in severe cases), liver function test (LFT) elevations.
- Bile acid sequestrants. Constipation, nausea, vomiting, headache, dizziness, stomach pain/distention, flatulence
- Nicotinic acid (NA). Skin flushing, itching, hepatotoxicity (more common with the SR formulation), gastrointestinal upset
- Fibric acids. Skin rash, gastrointestinal upset, constipation, flatulence, myopathy (increased when used with HMG-CoA inhibitors), liver function test elevations

Subgroups Most Likely to Experience Harm

- Bupropion. Do not use in patients with history of seizure (0.1% seizure rate), in alcoholics, or in patients with head trauma.
- Nicotinic acid (NA). Not safe in pregnancy (category B). Use in lactating women not recommended.
- Fibric acids. Not safe in pregnant (category C) or lactating women.
- Bile acid sequestrants. Colesevelam is the only bile acid sequestrant that is safe in pregnancy (category B). Safety of cholestyramine in lactation is controversial, but colestipol and colesevelam are felt to be safe.

CONTRAINDICATIONS

CONTRAINDICATIONS

- HMG CoA reductase inhibitors (statins). Contraindicated in pregnancy (category X). Not safe for infants of lactating mothers.
- Nicotine products. Contraindications include myocardial infarction in past 4 weeks, severe angina, arrhythmia, or pregnancy.

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

This guide is not intended to convey rigid standards, but instead, provide the primary care physician an algorithm for thinking through the identification and management of women with risk factors for cardiovascular disease. Treatment should be tailored to the needs of the individual woman.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Living with Illness
Staying Healthy

IOM DOMAIN

Effectiveness
Patient-centeredness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

Brigham and Women's Hospital. Cardiovascular disease in women: a guide to risk factor screening, prevention and management. Boston (MA): Brigham and Women's Hospital; 2002. 15 p. [16 references]

ADAPTATION

Portions of this guideline were adapted from the following sources:

The National Heart, Lung and Blood Institute (NHLBI), ATP-III guidelines (Expert Panel on Detection, Evaluation and Treatment of High Blood Cholesterol in Adults. Executive summary of the third report of the National Cholesterol Education Program [NCEP] Expert panel on detection, evaluation and treatment of high blood cholesterol in adults [Adult Treatment Panel III]. JAMA 2001; 285:2486-2497.

The National Heart, Lung and Blood Institute (NHLBI), Joint National Committee VI (The Sixth Report of the Joint National Committee on Prevention, Detection,

Evaluation, and Treatment of High Blood Pressure). Arch Intern Med 1997; 157:2413-2446.

American Diabetes Association: Clinical Practice Recommendations 2001. Diabetes Care 2001; Vol. 24: Supp1.

DATE RELEASED

2002

GUIDELINE DEVELOPER(S)

Brigham and Women's Hospital (Boston) - Hospital/Medical Center

SOURCE(S) OF FUNDING

Brigham and Women´s Hospital

GUIDELINE COMMITTEE

Not stated

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

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FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Not stated

GUIDELINE STATUS

This is the current release of the guideline.

GUIDELINE AVAILABILITY

Print copies: Available from the Brigham and Women´s Hospital, 75 Francis Street, Boston, Massachusetts 02115. Telephone: (800) BWH-9999.

AVAILABILITY OF COMPANION DOCUMENTS

None available

PATIENT RESOURCES

None available

NGC STATUS

This NGC summary was completed by ECRI on May 30, 2003. The information was verified by the guideline developer on August 14, 2003.

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